

Chapter 2 Project Management

2.1 Introduction

Managing a remedial design (RD) or a remedial action (RA) presents a number of challenges to the Remedial Project Manager (RPM). While RD/RA projects are similar to other design and construction projects in many respects, there are unique challenges that RPMs face due to the sensitized regulatory environment under which these projects are conducted. For example, managing an RD/RA project under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), requires that the RPM balance the sometimes conflicting objectives and needs of individuals and organizations whose cooperation is required for successful project completion. This chapter provides the RPM with the definition of project management and covers the skills required of and the activities performed by a successful project manager, quality principles to be applied to projects, and other general responsibilities. The RPM should be familiar with the project management concepts presented in this chapter and should periodically evaluate his or her management approach for effectively directing an RD or an RA.

2.2 Definition of Project Management

Project management is the process of creating, monitoring, and controlling the scope of work, schedule, and budget of an RD/RA project. The project manager creates and manages the project team, which is composed of all project participants. The RPM as project manager acts as the focal point of communications and coordinates project team efforts, ensuring that project participants work together to accomplish the RD/RA project. The project manager maintains a clear vision of the final objective—successful completion of the RD/RA project on time and within the budget—while coordinating the individuals, organizations, technology, money, equipment, time, and other resources to bring it about.

2.2.1 Scope of Work

The RD/RA scope of work must be based on the Record of Decision (ROD), which defines the selected remedy to be applied at the site. The elements of the ROD are contained within the following documents:

- Work assignments (WAs) issued to the EPA contractor for Federal/EPA-managed sites
- Interagency agreements (IAGs) for Federal/United States Army Corps of Engineers (USACE)-managed sites
- Cooperative agreements (CAs) for State-lead sites
- Consent decrees (CDs) or unilateral administrative orders (UAOs) for enforcement-lead sites

As the focus of the *RD/RA Handbook* is Federal-lead sites, CAs, CDs, and UAOs are not discussed in detail.

2.2.2 Project Budget, Funding, and Costs

Project budget, funding, and costs for Federal- and state-lead sites are maintained and tracked in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). One of the RPM's most important functions is updating RD/RA budget information in CERCLIS as the project progresses.

2.2.3 RD/RA Schedule

The project schedule, developed and managed by the RPM, is also tracked in CERCLIS. It is specified in the WA, IAG, CA, CD, or UAO, depending on the site-lead status. Scheduling is necessary to anticipate when project resources or participation by others will be needed. The RPM updates the schedule as the RD/RA project progresses.

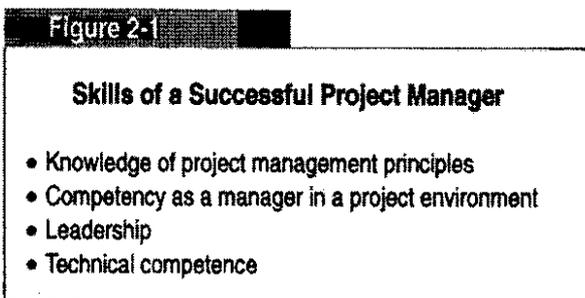
2.2.4 Project Team

Creating and managing an RD/RA project team from all the participants in an RD/RA project is a challenge. The RPM must rely on his or her ability to communicate among, direct, and coordinate

project participants. The RPM should use the project management plan, the Technical Review Team (TRT), a communications strategy, and other tools at his or her disposal to accomplish this task (see sections 3.2, 3.4, and 3.5).

2.3 Skills of a Successful Project Manager

Successfully managing an RD/RA project requires the RPM to blend a number of skills. Four of the most important, as listed in **Figure 2-1**, are knowledge of project management principles, competency as a manager in a project environment, leadership, and technical competence.



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2.3.1 Knowledge of Project Management Principles

Each RPM should understand basic project management principles and the application of these principles for the successful completion of an RD/RA project. Technical competence alone is insufficient because a large portion of the RPM's job is comprised of non-technical components. The project manager must perform his or her management functions with a foundation of basic project management principles, supplemented by a common-sense approach based on experience and effective use of scheduling and budgeting systems.

2.3.2 Competency as a Manager in a Project Environment

A successful RPM exhibits certain characteristics, such as having a concern about quality and performance, leadership ability, anticipating possible project constraints, staffing the project with quality people, communicating frequently and effectively, having effective work systems, documenting the project decision-making process, delegating authority when possible, being enthusiastic, and being sensitive to interpersonal and interorganizational relationships.

2.3.3 Leadership

The RPM must lead, motivate, and inspire project personnel to give their best efforts to the project. Completing an RD or RA brings people together who do not routinely work together. The RPM must develop a project team to perform satisfactorily; an RPM's personal attributes are as important as project management systems and procedures for this skill. Leadership includes setting a project's direction, establishing a vision, and developing and implementing strategies to achieve the project goals.

2.3.4 Technical Competence

Ideally, the RPM should be competent in a discipline suitable to the project. This allows the RPM to feel comfortable with, and contribute to, the highly technical aspects of the RD/RA and enhance his or her ability to communicate effectively with technical participants in the project. An RPM familiar with the technical aspects of a project is better equipped to make decisions regarding the project scope, schedule, and budget issues, thus reinforcing his or her leadership position and gaining respect from project team members. RPMs lacking the applicable technical abilities for their projects should select others with these skills to assist in RD/RA activities. One of the best training methods for an inexperienced RPM is to seek an apprentice relationship with an experienced RPM, particularly before assuming first-time responsibility for an RD/RA.

2.4 Project Management

This section presents approaches to routine activities for monitoring and managing RD/RA projects. These methods are extremely important in producing a successful project and have their roots in traditional project management.

Effective management at the onset of and throughout a project minimizes the obstacles that develop as the project progresses. During initial project stages, it is easier to effect change and to take corrective action. Changes during later project stages usually take significantly more effort to achieve, cost more, and extend the schedule.

2.4.1 Monitoring the RD/RA

The RPM monitors actual site progress, adherence to the project schedule, and budget and work

performance throughout the project, using a number of techniques at his or her disposal.

Site Progress

The primary method for gauging site progress is to compare actual events with the schedule and budget developed in the planning phase; this is accomplished by holding review meetings in conjunction with obtaining regular status reports. Both USACE and EPA contractors should produce monthly progress reports for RPM use. More frequent reports may be needed during RA construction (i.e., the RA statement of work [SOW] could be written to require weekly reports). The Alternative Remedial Contracting Strategy (ARCS)/Response Action Contract (RAC) contractors are required by contract to provide specific types of progress reports that the RPM uses to compare the actual schedule and budget with the planned targets. To facilitate this comparison, the regular progress reports must:

- Determine the status and progress of each task towards its objective
- Report progress for the current period and estimate progress for the succeeding period
- Report expenditures for the current period and estimate expenditures for the succeeding period
- Review total expenditures
- Review the overall schedule and budget status
- Identify issues affecting work progress, especially ones that may cause delay or necessitate additional funding

Schedule and Budget

Monitoring and reporting of project schedules are conducted using the techniques discussed in section 3.8. The RPM uses this information in the short-term to ensure that critical milestones such as design reviews are met. These techniques also are used for long-term project management decisions to avoid delays that could affect the schedule and budget.

Budget reports are monitored by the RPM to ensure that a particular activity is being accomplished according to its overall schedule and within the budget ceiling, to ascertain that funding is spent

appropriately, and to obtain cost information for invoice approval. The RPM also reviews budget reports to assess the underutilization or overutilization of funds and labor hours (burn rate) as compared to the expected burn rate.

Work Performance

In addition to routine monitoring of the schedule and budget, the RPM evaluates work performance. Where deficiencies are noted, the RPM must be proactive and correct the deficiencies as soon as possible. Early corrections allow a project to get back on course without additional expenditures and schedule delays.

An RPM may receive a seemingly overwhelming number of submittals (deliverables) because of his or her monitoring function. A register, like the one in **Appendix B**, can be used by the RPM as a valuable tool to track submittals, due dates, and required EPA action. The RPM should decide which submittals he or she will review and which submittals the Technical Review Team (see section 3.4) will review.

Implementation of effective quality assurance and quality control (QA/QC) activities to support RD/RA work is critical to work performance. The RPM is responsible for planning, implementing, and assessing the effectiveness of required and appropriate QA/QC activities that support all phases of the RD/RA process. Part C of the ANSI/ASQC guidelines should be used as the basis for QA/QC for RD/RA projects.

ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," Part C, provides the minimum quality systems requirements for the design, construction, and operation of technology used for RD/RAs.

2.4.2 Managing the RD/RA

Although a project manager is held accountable for all aspects of a project, a Superfund RPM seldom has the authority or the control of all external factors to ensure that a project proceeds according to plan. Thus, the RPM must develop a proactive approach to project management.

For example, routine progress meetings help the RPM identify potential deviations from the project strategy. RPM response to a particular project management issue varies depending on the problem and its immediacy—some deviations will be long-term trends rather than immediate events. Deviations from project strategy are avoided or controlled by initiating preventive or corrective actions. The proactive approach emphasizes anticipating potential problems and developing pre-emptive solutions, devising work-around strategies when problems do arise, and modifying the project with minimum disruptions to handle surprise situations that inevitably arise.

Anticipatory Actions

Anticipatory actions are preventive strategies for avoiding potential schedule disruptions. Possible actions include:

- Requesting USACE assistance in EPA contractor oversight
- Maintaining strict submittal schedules
- Increasing direct observation of office or field activities
- Maintaining awareness of upcoming project milestones and associated EPA reviews
- Identification and resolution of property access issues
- Early and continued interaction with the community
- Early state involvement

Work-Around Strategies

Work-around strategies respond to negative deviations (usually in schedule, budget, or personnel resources) to accommodate changes and minimize the effects on overall completion of the project. Examples include:

- Streamlining requirements for work products to avoid repetition of data in multiple deliverables
- Conducting in-progress reviews to eliminate interim deliverable requirements

Modifications to Project Strategy

Modifications are used to accommodate deviations only as a last resort. Modifications alter the project budget, schedule, or scope and may require:

- Additional funding (if available)
- ROD changes
- Superfund state contract (SSC) changes

2.5 General RPM Responsibilities During RD/RA

This section provides an overview of the RPM's responsibilities during the performance of the RD/RA. As a professional project manager responsible for the successful completion of a technically complex, multi-million dollar design and construction project, the RPM has an instrumental role in the planning, execution, control, and closeout of the RD/RA. As such, the RPM is a guardian of the taxpayer's money, imbued with upholding the public trust in executing a ROD as promised.

To carry out his or her responsibilities, the RPM must oversee the successful completion of the RD/RA, regardless of lead, and ensure that the completed remedy meets all goals and objectives described in the ROD. The RPM's involvement in ensuring that the objectives and goals are achieved varies depending on the designated lead agency or party. In attempting to achieve the end results of the RA, the RPM should manage the big picture and not micro-manage all aspects of the project. Micro-management can result in the RPM becoming overwhelmed as the project progresses. The RPM must use appropriate team members to help manage the RD/RA and delegate responsibility to those individuals or organizations so that he or she can effectively manage the entire project.

Specific details on RPM responsibilities are presented throughout Chapters 3, 4, and 5.

Figure 2-2 lists the RPM's general responsibilities during each of the RD/RA phases. RPM responsibilities can be divided into the following categories, each described below, which provide a

Figure 2-2

Remedial Project Management Responsibilities	
Overall	<ul style="list-style-type: none"> • Ensures completed remedy meets all goals and objectives in the ROD • Focuses on the overall management ("big picture") versus micro-management of RD/RA
RD/RA Planning	<ul style="list-style-type: none"> • Develops project management plan • Organizes Technical Review Team • Establishes communications strategy • Understands requirements and procedures of EPA support contracts • Prepares SOW, schedule, budget/independent government cost estimate • Revises budget and schedule based on review of the contractor's/USACE's work plan and subsequent negotiations • Coordinates with the state/potentially responsible parties (PRPs) regarding site access • Ensures public awareness of RD/RA activities • Ensures all applicable or relevant and appropriate requirements (ARARs) are identified for the site • Plans necessary QA/QC activities
RD/RA Execution	<ul style="list-style-type: none"> • Monitors, controls, and revises schedule on regular basis • Monitors, controls, and revises budget on regular basis • Audits project execution • Reviews key deliverables and ensures quality products • Manages WAs, IAGs, CAs, CDs, and other agreements • Facilitates communications between parties • Updates CERCLIS/WasteLAN Systems • Maintains administrative record/site files
RD/RA Closeout	<ul style="list-style-type: none"> • Conducts final inspection • Reviews RA reports • Prepares WA closeout report or formal closeout request for the IAG, reviews and approves invoices, and deobligates any remaining funds in WA, IAG, or CA

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framework for understanding the general and varied nature of the position:

- Responsibilities during RD/RA planning
- Responsibilities during RD/RA execution
- Responsibilities during RD/RA closeout
- Limits of authority
- Potential liability

2.5.1 Responsibilities During RD/RA Planning

The RPM is the key to successful project planning and should devote considerable time and energy to

the planning and startup phases of the project. The majority of funds in the Superfund program are spent on RDs and RAs; consequently, it is important that each RD/RA project be successful. Although even the most carefully planned and administered project can develop serious implementation problems, the chances of this occurring are greatly reduced by adequately scoping the project and developing a strategy for project implementation. When planning the RD/RA, the RPM must be aware of his or her role, responsibilities, and level of authority to ensure that the best plan for accomplishing the objectives is produced.

Initially, the RPM should develop a project management plan (section 3.1) to serve as a framework for defining the RPM's approach to project execution. This enables the RPM to visualize the specifics of the project, make key decisions regarding execution, consider constraints, and plan accordingly. The project management plan is an evolving document that is updated periodically as more information is gathered and circumstances change. The purpose of the project management plan is to develop a strategy to complete the RD/RA successfully. It is a particularly useful tool for the less experienced RPM who has not yet managed an RD/RA project. Less experienced RPMs should obtain assistance in preparing a project management plan from a more experienced manager. Experienced RPMs may find that they already perform a similar planning exercise when scoping the project.

OSWER Directive 9355.0-43, "Guidance for Scoping the Remedial Design," (Publication No. PB95-963306), March 1995, provides more information on scoping an RD project.

2.5.2 Responsibilities During RD/RA Execution

After the initial planning is completed and the RD/RA begins, the RPM is responsible for ensuring that the project progresses on schedule and within budget. To do so, the RPM manages the EPA contractor, USACE, state, or potentially responsible parties (PRPs) by:

- Initiating and maintaining frequent communications with project participants via conference calls
- Conducting regular meetings to discuss RD/RA progress, identify problems, and take corrective actions as necessary
- Developing complete documentation of all meetings and conference calls
- Ensuring timely review of key deliverables by the TRT (section 3.4)

2.5.3 Responsibilities During RD/RA Closeout

Upon completion of the RD/RA, the RPM must ensure that the appropriate procedures are followed for closing out the EPA contractor WA, the USACE

IAG, the state CA, or the PRP-lead activities. The RPM also ensures that the proper transfer of sites to parties responsible for operation and maintenance (O&M) of the remedy takes place. For Federal-lead, Fund-financed sites, the state generally is responsible for O&M and its responsibilities are outlined in the SSC. Chapter 5 and section 3.11 contain additional information on these responsibilities.

2.5.4 Limits of Authority

During project execution, EPA enters into agreements with a state, USACE, a contractor, or PRPs to accomplish all or part of the remedial activities at the site. Even though the successful completion of the RD/RA is the RPM's responsibility, he or she often does not have the authority or ability to control all external influences that can impede the project's successful completion.

For Federal-lead/EPA-managed RDs and RAs, the RPM must know the contracting structure of the project; the RPM cannot direct or assign work not specified in contract documents (e.g., the SOW or a WA) or enforcement documents. The Contracting Officer (CO) is the only government official who can authorize work beyond the original scope of the WA. To prevent this from happening, the RPM must develop a thorough SOW for the WA while being familiar with the terms and organization of all agreements with all the parties involved. For Superfund sites, the RPM usually functions as a Work Assignment Manager (WAM). When functioning as a WAM, the RPM should be aware of his or her limits of authority in directing and authorizing work. As the CO is the only government official authorized to commit government funds in a WA, the RPM must not direct a contractor to initiate work before receiving authorization from the CO.

When USACE is the contracting party and manages the RD or RA, personnel from USACE authorize the work. The RPM should understand his or her role and limits of authority and work within the limits of the particular contractual agreement (the IAG).

In addition to knowing his or her limit of authority under each type of agreement, the RPM must administer the necessary paperwork for the agreement. For all types of agreements into which

EPA enters with third parties to implement Superfund remedial activities, the RPM usually initiates, monitors, revises (as necessary), and closes out the agreements.

2.5.5 Potential RPM Liability

The RPM should understand his or her own liability and the liability of others during the performance of the RD/RA.

Remedial Design

Although the RPM approves the design and deliverables before they are implemented, EPA's review and approval does not imply an assumption of responsibility for design deficiencies, errors, or omissions. Whenever the RPM submits review comments or approves a design, the correspondence should include a clause that emphasizes that the responsibility for the effectiveness of the design rests with the designer and that RPM "approval" constitutes only an authorization to proceed. Likewise, the RPM does not approve, although he or she may appear to do so, other design-related deliverables such as the health and safety plan (HASP) and the quality assurance project plan.

The RPM also must guard against directing the design contractor toward an unsound design. If the RPM does so and the implemented design fails, and the contractor was not negligent in implementing the design, then the design contractor's liability is reduced or eliminated, regardless of whether the RD/RA is a Federal-, state-, or enforcement-lead project. However, the RPM, as a federal employee, would not be personally liable for government damages resulting from directing the design contractor because government employees are protected from personal liability incurred from performance of their

job duties under the Federal Torts Claims Act. *An RPM could incur personal liability for damages, however, if the damages are the result of an action the RPM knowingly performed outside the scope of his or her job duties or area of competence.*

To avoid those situations, the RPM should assemble a complete and competent TRT to review thoroughly the design (see section 3.4). The RPM also should verify that the design contractor is complying with its own design QA/QC plan.

Remedial Action

The RPM must respect the privity of contract between the contracting party and the constructor. Unless EPA has a contract directly with a constructor, EPA must not direct the work of the constructor. Only the party contracting directly with the constructor has the authority to do so. For example, during remediation activities, the RPM must be cautious to ensure conformance with the specifications without assuming responsibility for the direction of the work of the constructor. To accomplish that, the RPM works with the EPA contractor or USACE, which then directs the work of the constructor.

As with RD deliverables, EPA review and approval of RA deliverables such as the HASP does not constitute legal "approval." For more specific information on legal liability, consult the Office of General Counsel or Regional Counsel.

If an RA contract modification is required because of an error or deficiency in the design, the party that contracted for the design should examine the designer's possible liability. If sufficient liability appears to exist, the designer may be held liable.